nally-applied coupons, a thin material is preferably welded or glued to the pipeline's internal wall. To achieve coupon regularity, stencils are used to enable melted material to be applied, forming identical square marker coupons. In structural embodiments, pipeline material is typically removed by light grinding—internally or externally—producing the prerequisite plurality of code marks as localized loss of wall thickness.

[0055] It will be understood by those skilled in the art that recent developments in technology allow molecular level changes in material composites to consequently produce localized variations of metal structure. This, of course, would be a particularly advantageous factory-application of PIPS, wherein manufactured pipe is marked to identify its source of origin, batch, etc. It will be appreciated by those skilled in the art that structural changes to the pipeline thickness may also be achieved by appropriately changing the density of the material in different 90° positions or the like produces the same code that would be obtained by attaching material to the pipe. It will be understood that this approach functions like X-ray images of metal samples, detecting different densities of material.

[0056] Those skilled in the art will appreciate the following illustrative application of the present invention. According to typical maintenance programs in the art, a pipeline requires smart pig inspections on a yearly basis. Instead of assessing a budget for funding annual installation of conventional temporary markers, a pipeline owner now installs appropriate PIPS codes the first year. Under the preferred embodiment, such PIPS codes are applied at one-mile intervals on a 100 mile long, 12 inch diameter steel pipeline, with 0.250" wall thickness. Each location is accorded a Registration Mark to signal the beginning of code and the marker coupons for each digit. As hereinbefore described, marker coupons are sized so that up to four marker coupons may be applied to the circumference without touching each other, preferably leaving a few inches therebetween. It has been found that this configuration allows for detection by smart pigs or the like, with low resolution. Hence, markers of proper size can be detected by MFL or ultrasonic pigs that carry low resolution sensors. It will be appreciated that the minimum resolution comfortably allows for 3" square marker coupons.

[0057] It should be evident that such square coupons should preferably be cut from pipe or steel of the same thickness as the underlying pipeline (0.250"). Each Registration Mark should be placed about one foot away from the girth weld joint, and the mile number should be placed about 6 inches from the Registration Mark. Successive digits should preferably be placed about 6 inches away from the previous mark. For simplicity, all marker coupons for each location should be placed on belts as long as the circumference of the pipe. The belts are labeled with mile number, top position, and order of placement. Then, crew workers weld, braze, or glue the plurality of individual marker coupons to the pipeline in a manner well known in the art.

[0058] As an example, **FIGS. 6A and B** depict the application of the present invention to a conventional pipeline marker for "Mile Post 4."**FIG. 6A** depicts Mile Post 4, typically referred to as "MP4" in the field. **FIG. 6B** depicts the clock position of each of marker coupons **435** A, B, C and **424** corresponding to PIPS beginning-of-code and code "4." It will be clear that the beginning-of-code Registration Mark signals the operator that a plurality of identification and location codes will follow; it also signals the top position of the pipeline segment for smart pig calibration purposes or the like. Coupon **424** representing code of "**4**" disposed at the 9 o'clock position corresponds to MP4.

[0059] As another example, **FIGS. 7A and B** depict the application of the present invention to a conventional pipeline marker for "Mile Post =b **8**.=l "**FIG. 7A** depicts Mile Post 8, typically referred to as "MP8" in the field. It will be understood that internal inspection devices fail to recognize such pipeline sites as shown in **FIGS. 6A and 7A** unless specific markers are placed during a survey or the like. The particular geographic location is then correlated with the distance traveled by the inspection device to property locate and label the site in the inspection report. **FIG. 7B** depicts the clock position of each of plurality of marker coupons **535** A, B, C and **528** A, B corresponding to PIPS beginning-of-code and code "**8**". It will be clear that the beginning-of-code Registration Mark signals the operator that a plurality of identification and Location codes wilt follow; it also signals the top position of the pipeline segment for smart pig calibration purposes or the like. Coupons **528** A and B representing code of "**8**" disposed at the 9 and 12 o'clock positions correspond to MP8. It should be evident that, even if a smart pig fails to accurately record distance during pipeline inspection, the in situ PIPS marker will still accurately and reliably record the position of aerial marker MP8. The present invention contemplates that no other geographical location of the pipeline will be accorded the same identifying name or code.

[0060] It will be evident to those skilled in the art that the present invention affords a panoply of important advantages for the pipeline identification and positioning art. A pipeline owner may develop a unique protected code in order to identify the pipeline or sections of pipeline that are of special interest. No special training or background is required for the code-installation. It should be clear that on-site preparation and easy-to-follow code-application are a feature of the present invention.

[0061] Location of PIPS pipeline markers need not to be disclosed to any third party when performing a survey. Smart pigs can detect all PIPS-marked locations while no interpretation of the code is given to the inspection company. It should be evident that PIPS promotes the identification of problems during inspections, and before inspection equipment Leaves the job-site. The precise accuracy of the system of the present invention verifies linear distance measurements performed by smart pigs. Orientation of PIPS markers promotes verification of the clock position of the pig sensors.

[0062] Unlike the prior art, failure of smart pig odometer readings do not jeopardize the identification of PIPS markers. It will be appreciated that smart pig problems are easily identified when PIPS markers appear in the wrong position. Exact distances between PIPS markers that do not correlate to smart pig measurements identify problems before the inspection crews leave the job-site. All PIPS markers for a specific pipeline should preferably be of similar size and characteristics, and installed with a uniform criteria. Then, smart pigs that record markers as having different sizes, thickness, or features may point to sensor malfunctions. It